

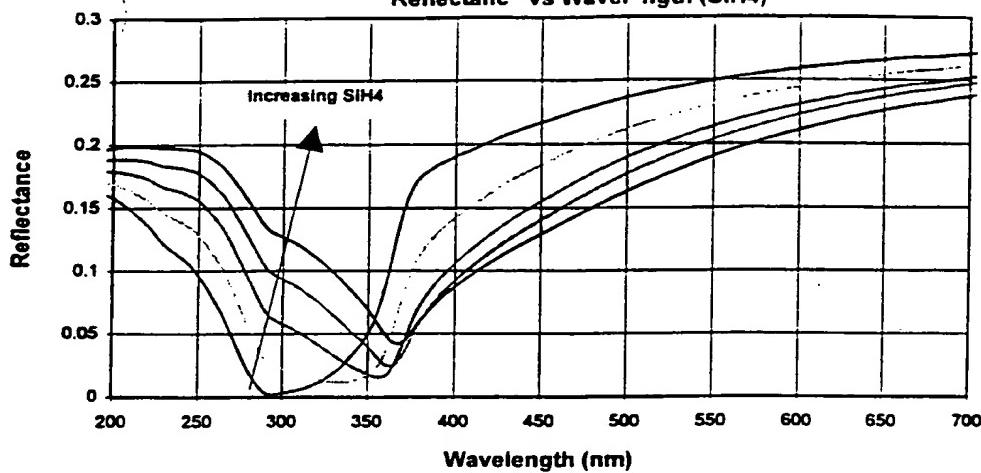
ARL Film RBS/HFS Sample Results

APPENDIX B

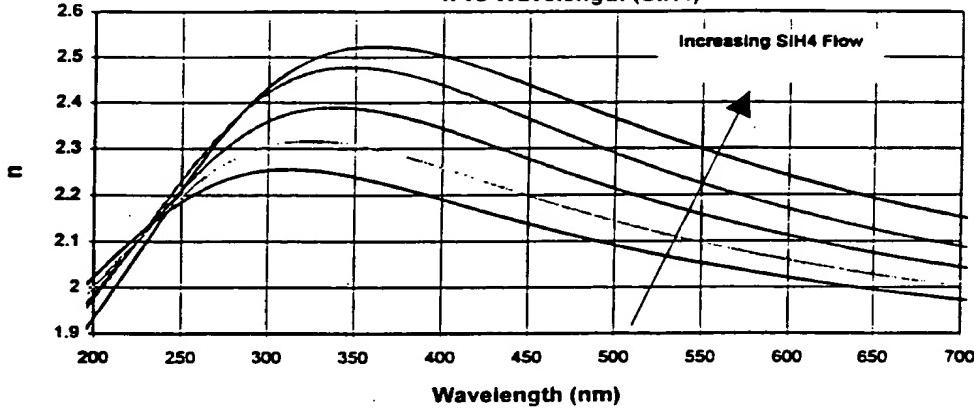
Process	DEEP-UV		DEEP-UV		DEEP-UV		DEEP-UV		I-LINE		I-LINE	
	[w/NH <sub>3</sub> ]	[w/o NH <sub>3</sub> ]	[+60% SiH <sup>4</sup> ]	[Standard]	[-60% SiH <sup>4</sup> ]	[Standard]	[300C dep]	[400C dep]	[300C dep]	[400C dep]	[w/o N <sub>2</sub> ]	
Faceplate	▲ Nitride	▲ Nitride	▲ Nitride	▲ Nitride	▲ Nitride	▲ Nitride	GG Nitride	GG Nitride	GG Nitride	GG Nitride	GG Nitride	
Pumping Plate	▲ Nitride	▲ Nitride	▲ Nitride	▲ Nitride	▲ Nitride	▲ Nitride	5-hole	5-hole	5-hole	5-hole	13-hole	
Blocker	Std. w/cntn holes	Std. w/cntn holes	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	
Temperature(°C)	350	350	350	350	350	350	300	300	400	400	350	
Pressure(torr)	4.6	4.6	4.6	4.6	4.6	4.6	5.3	5.3	5.3	5.3	5.0	
Spacing(mils)	500	500	500	500	500	500	525	525	525	525	460	
RF1 (watts)	160	160	160	160	160	160	130	130	130	130	150	
SiH <sub>4</sub> (sccm)	51	81	51	51	20	20	63	63	63	63	82	
N <sub>2</sub> O (sccm)	30	155	30	30	30	30	34	34	34	34	90	
N <sub>2</sub> (sccm)	200	200	200	200	200	200	200	200	200	200	0	
He (sccm)	2200	2200	2000	2000	2000	2000	1900	1900	1900	1900	2200	
NH <sub>3</sub> (sccm)	125	-	-	-	-	-	-	-	-	-	-	
Thickness	700Å	1200Å	300Å	300Å	300Å	300Å	300Å	300Å	300Å	300Å	300Å	
n	2.3	1.8	2.1	2.1	2.1	2.1	2.5	2.5	2.65	2.65	2.5	
k	0.3	0.14	0.7	0.7	0.7	0.7	0.42	0.42	0.63	0.63	0.39	
% reflectance	1.10%	1.80%	15%	15%	15%	15%	4.000%	4.000%	9.00%	9.00%	2.5%	
Atomic conc.(%)												
H	15.0%	13.5%	17.0%	16.0%	14.0%	14.0%	20.0%	20.0%	13.0%	13.0%	8.0%	
C	0.0%	0.0%	10.0%	5.0%	0.0%	0.0%	8.0%	8.0%	10.0%	10.0%	0.00%	
N	34.0%	15.0%	15.3%	18.1%	15.0%	15.0%	17.0%	17.0%	17.0%	17.0%	10.0%	
O	9.0%	34.5%	15.7%	15.9%	31.0%	31.0%	15.0%	15.0%	15.0%	15.0%	20.0%	
Si	42.0%	37.0%	42.0%	45.0%	40.0%	40.0%	45.0%	45.0%	45.0%	45.0%	52.0%	

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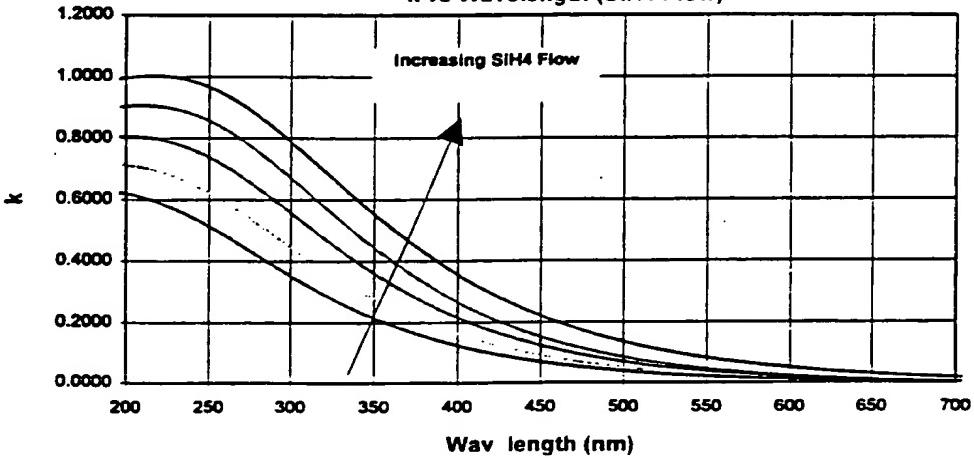
**ARC DEVELOPMENT**  
Reflectance vs Wavelength (SiH4)



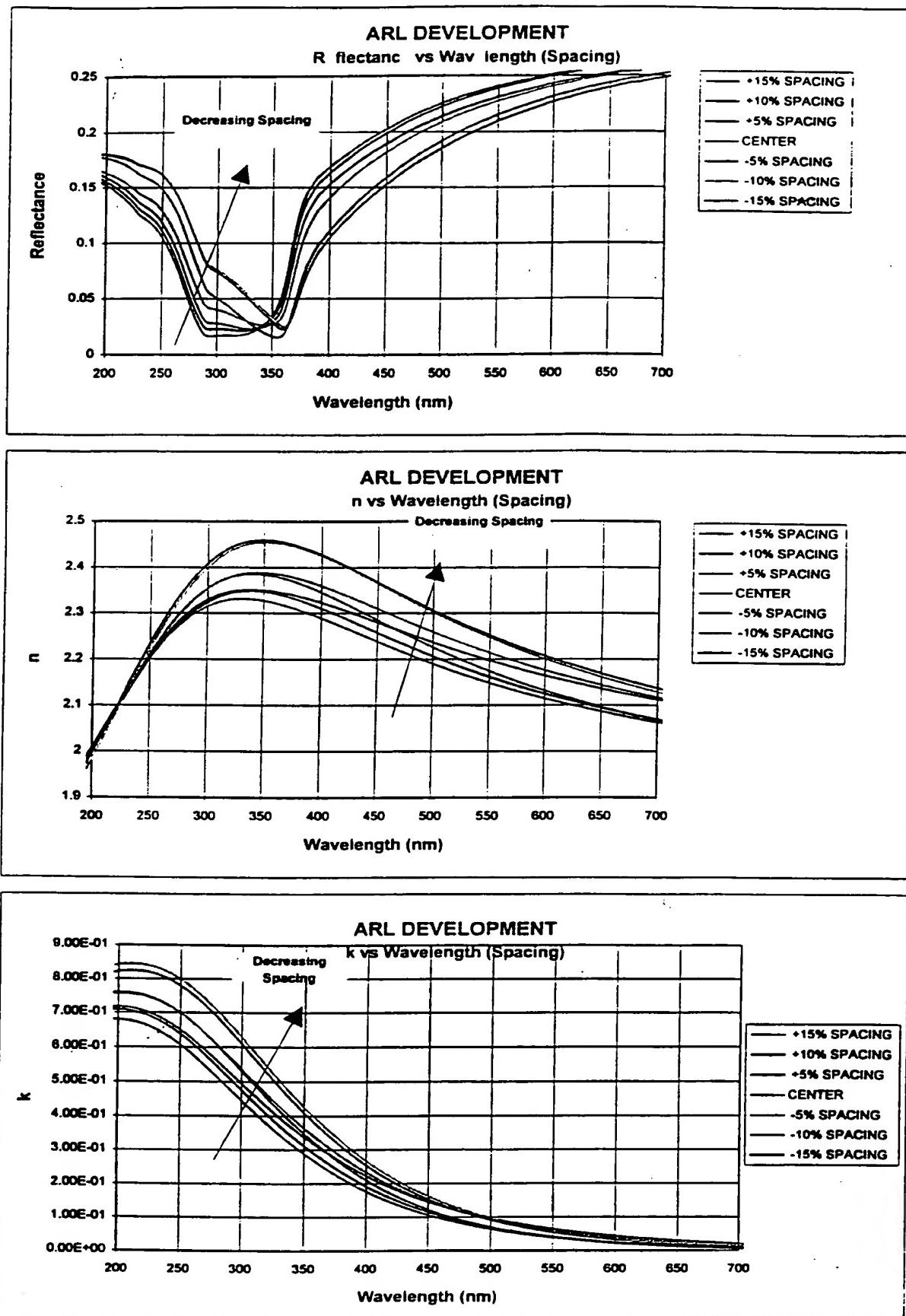
**ARC DEVELOPMENT**  
n vs Wavelength (SiH4)



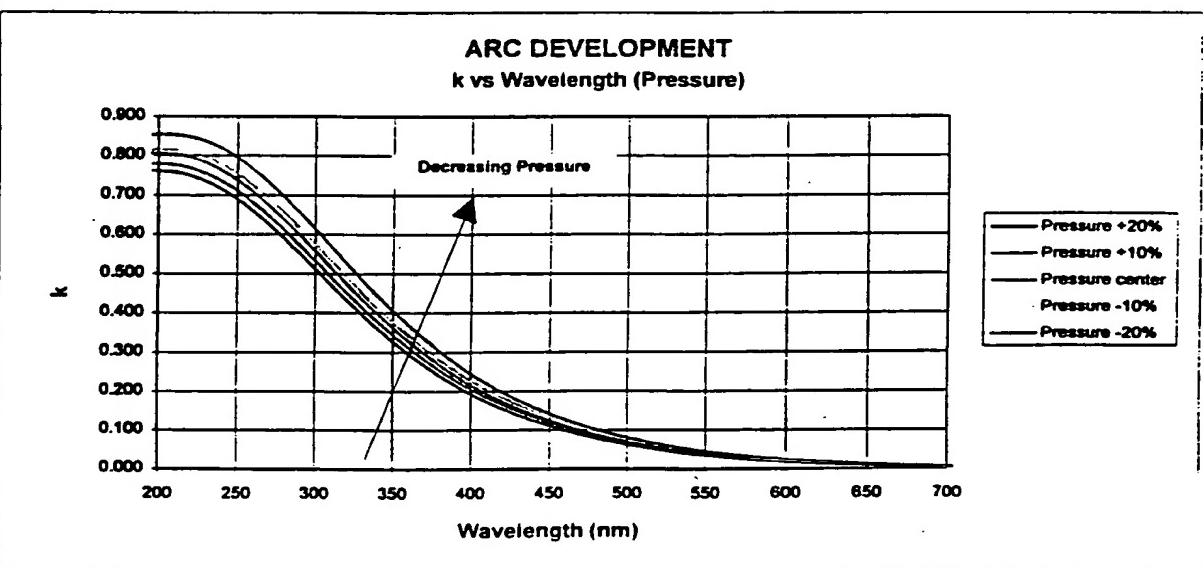
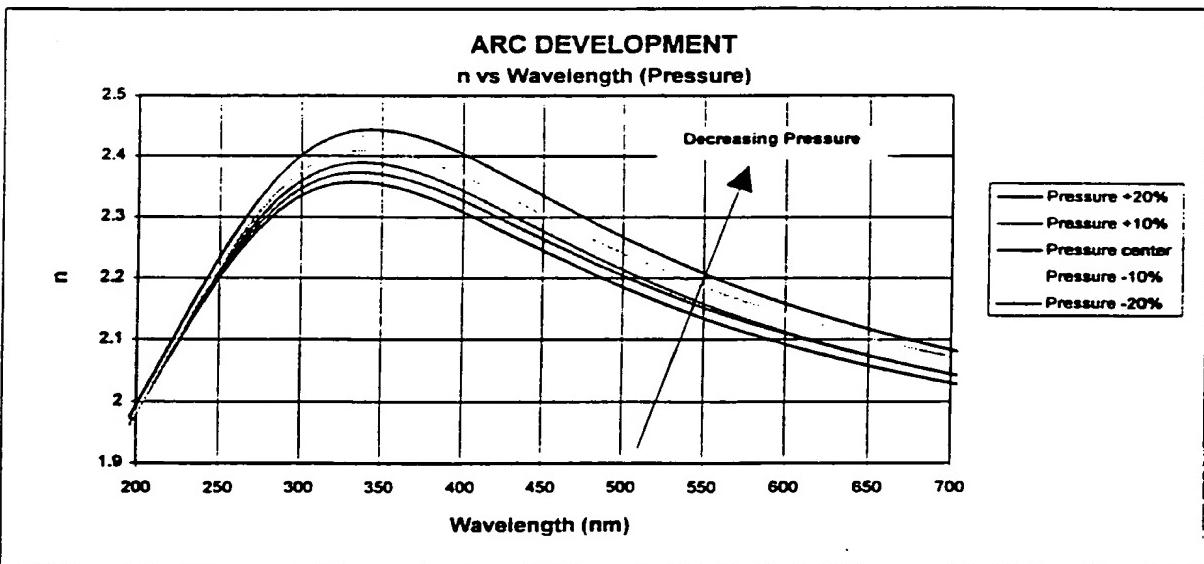
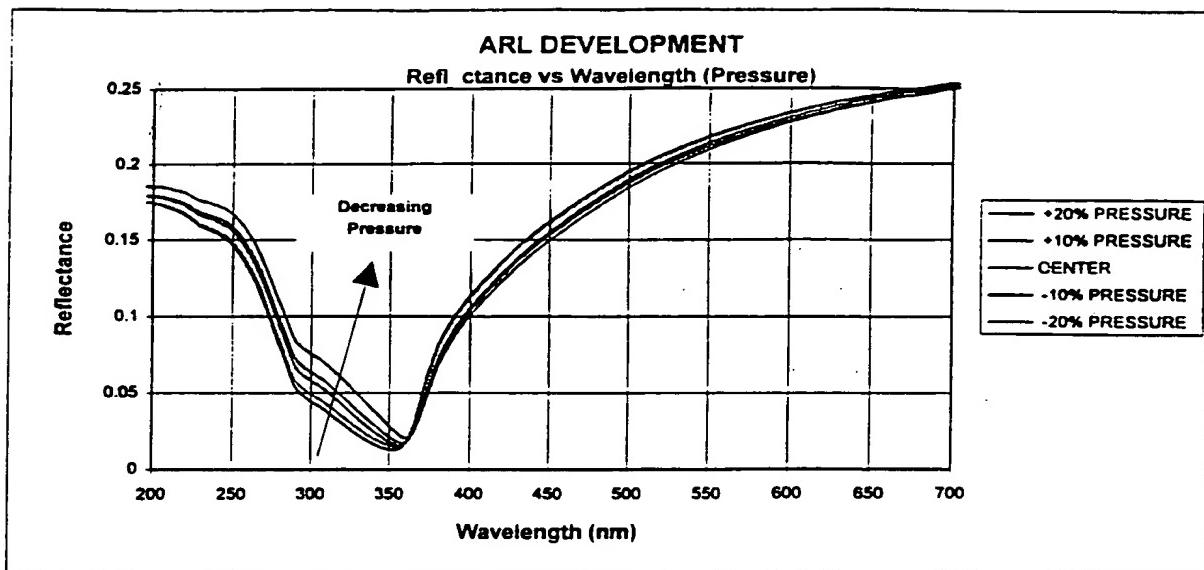
**ARC DEVELOPMENT**  
k vs Wavelength (SiH4 Flow)



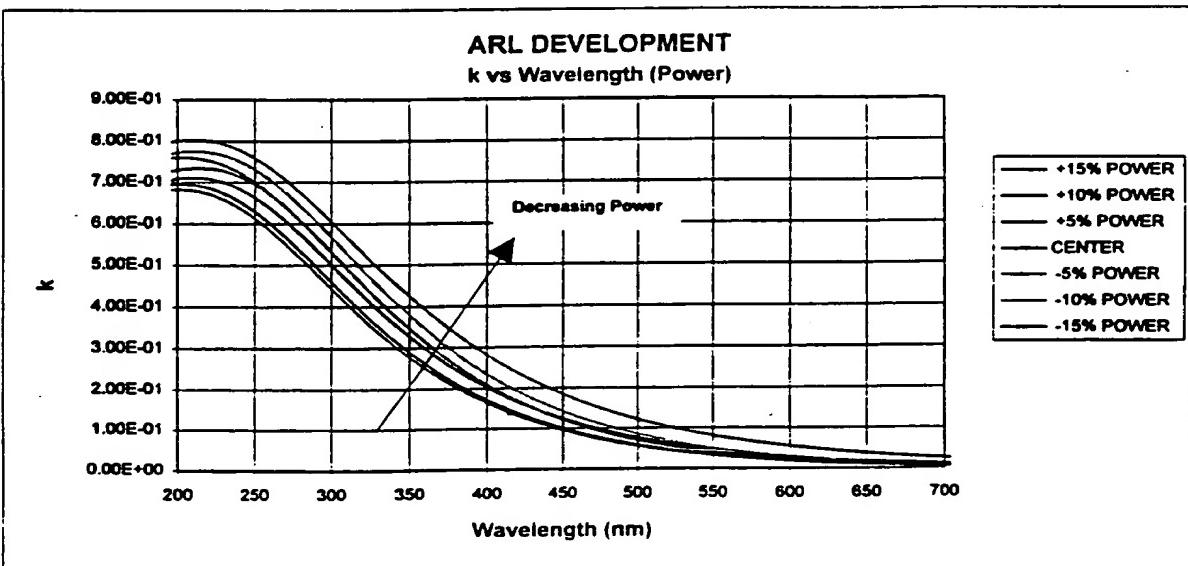
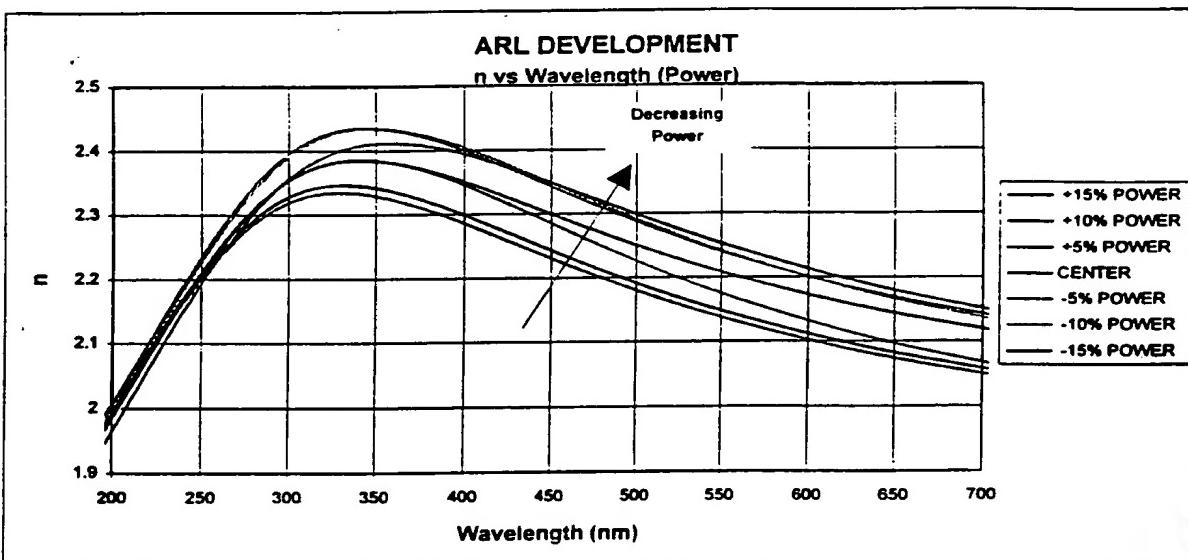
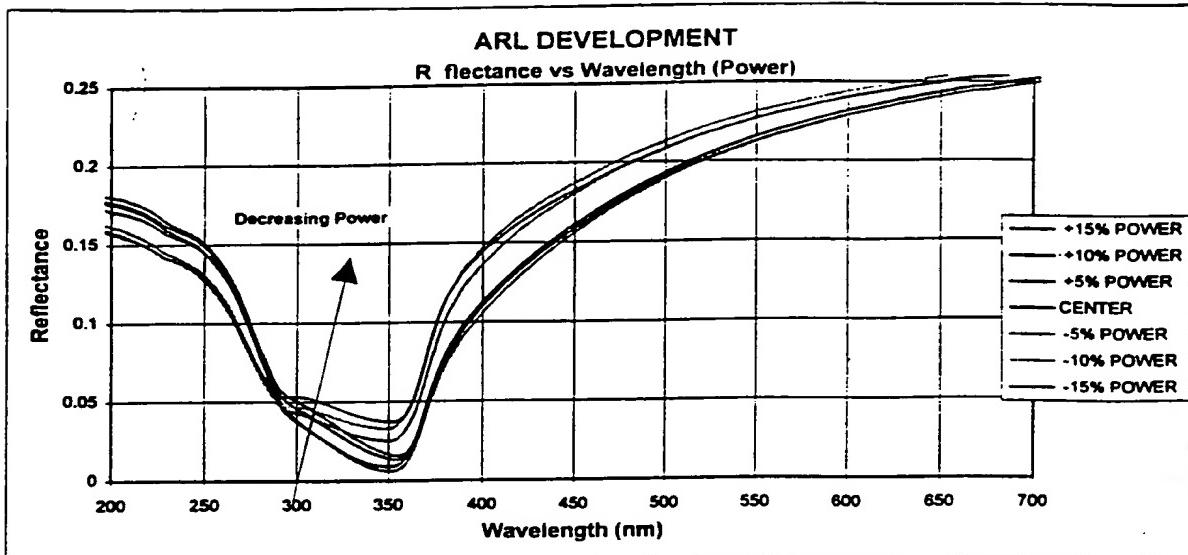
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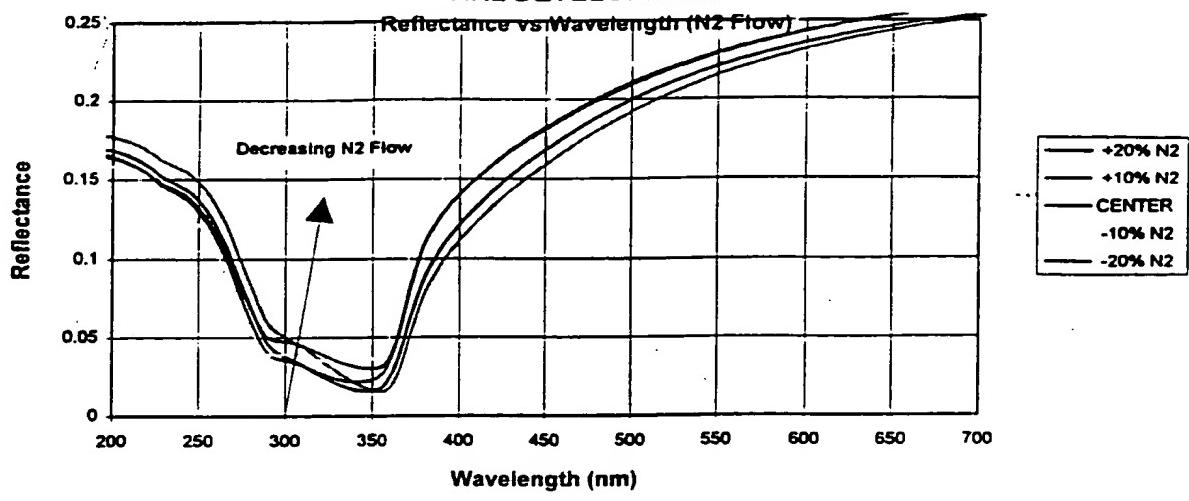


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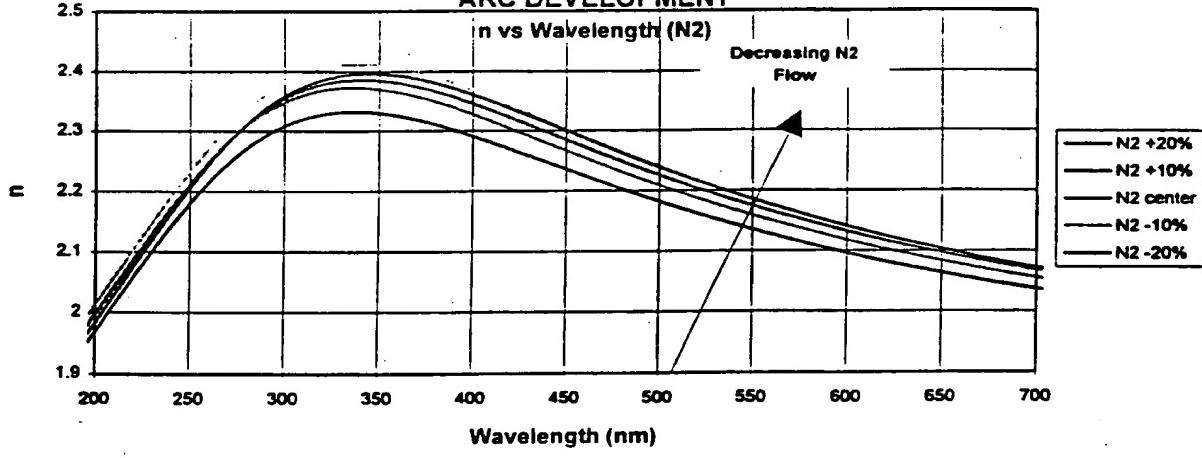


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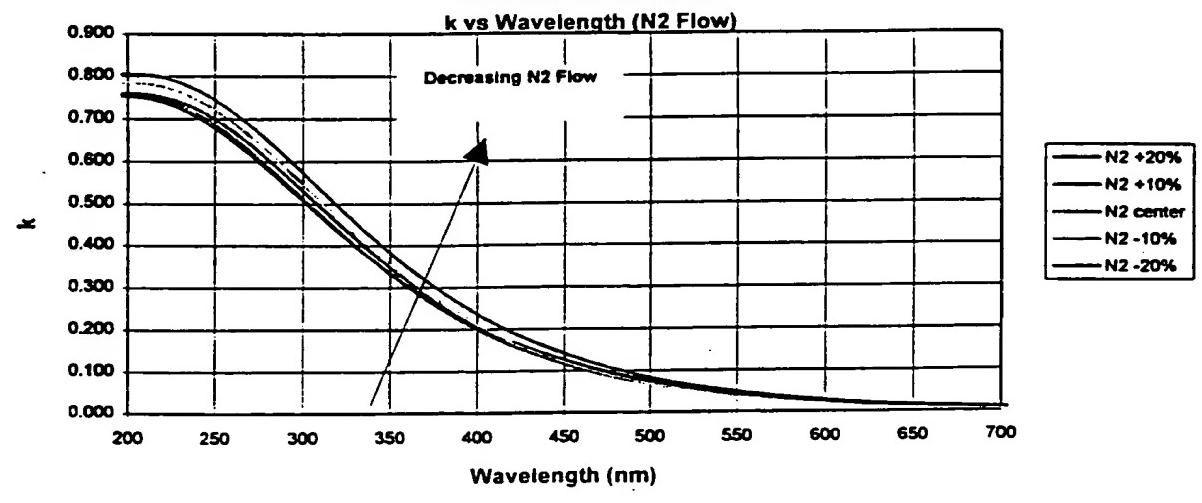
### ARL DEVELOPMENT



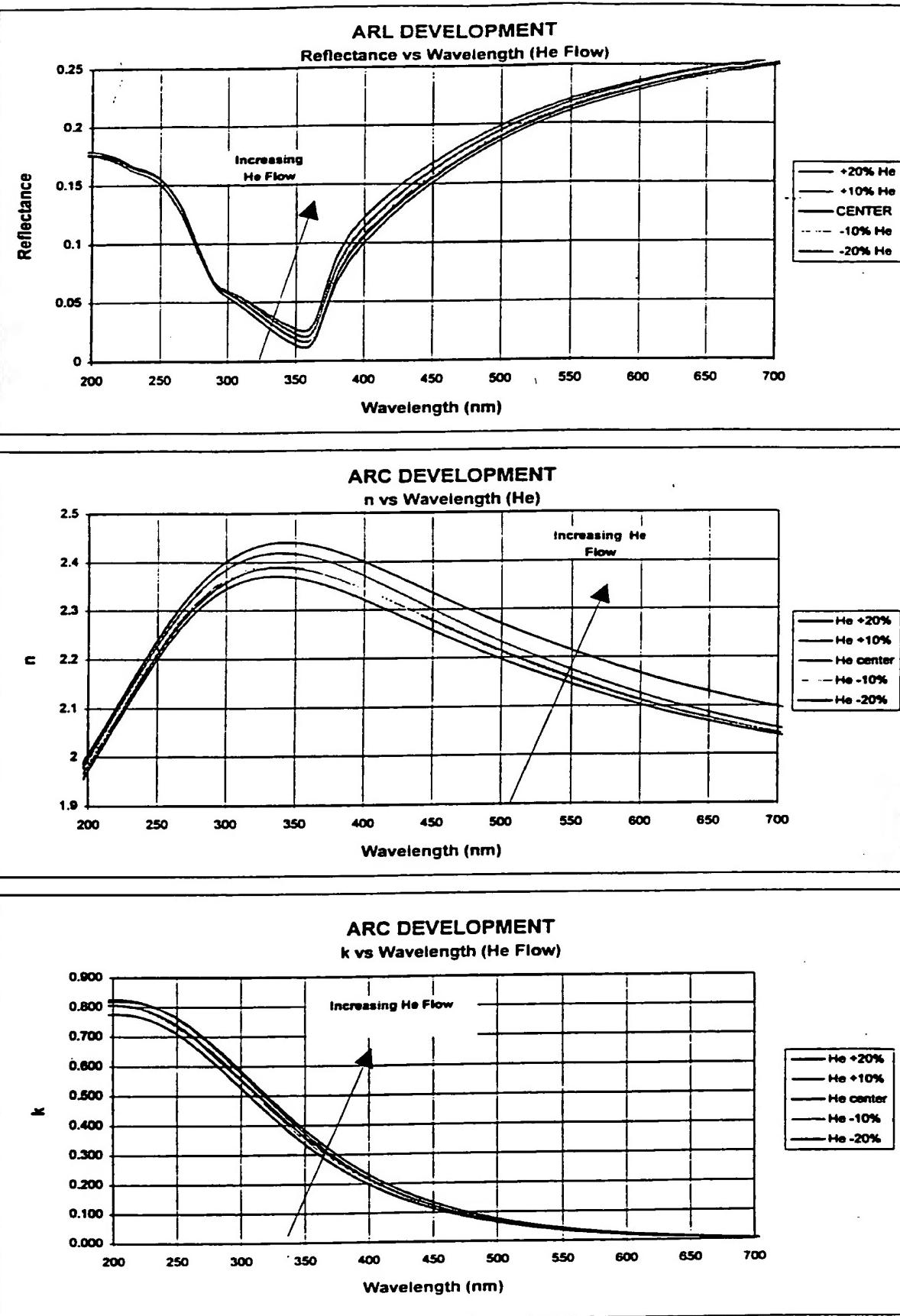
### ARC DEVELOPMENT



### ARC DEVELOPMENT

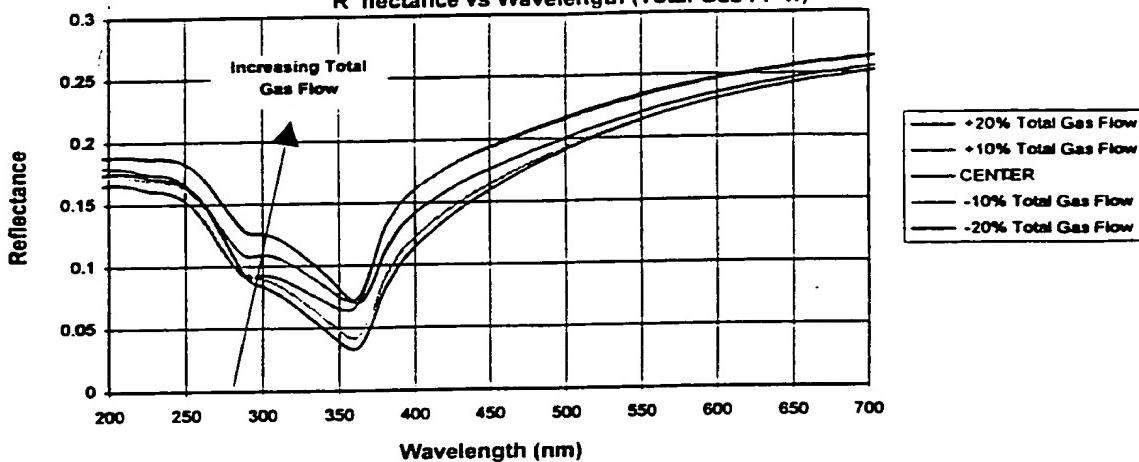


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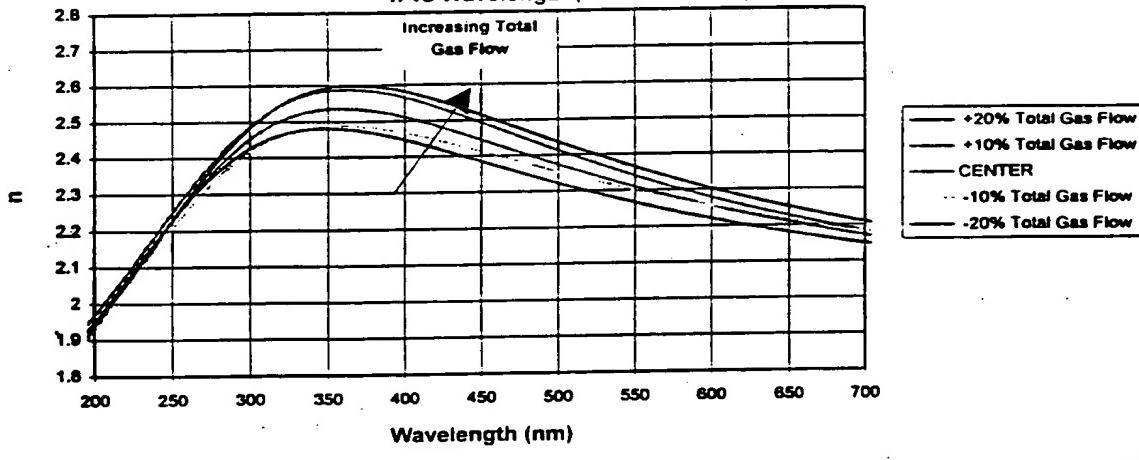


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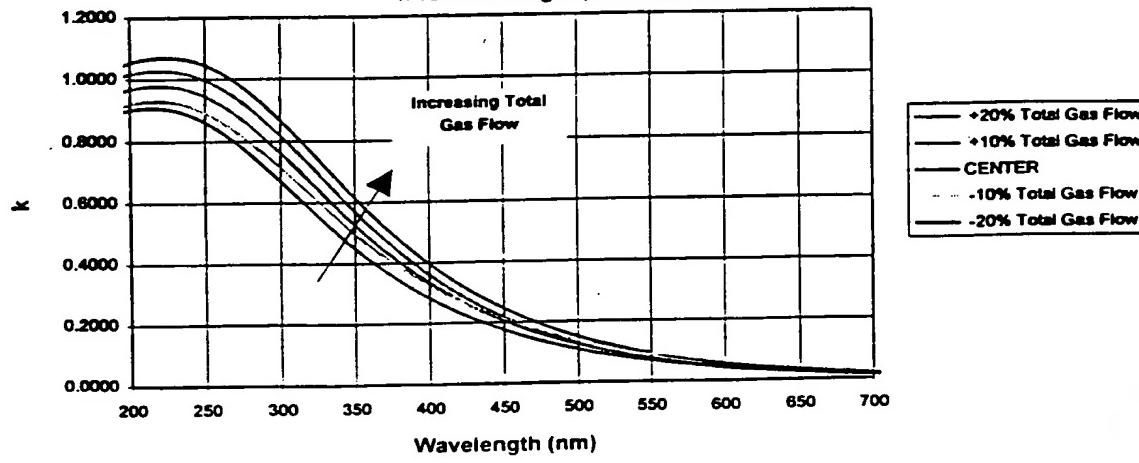
### ARC DEVELOPMENT R reflectance vs Wavelength (Total Gas Flow)



### ARC DEVELOPMENT n vs Wavelength (Total Gas Flow)

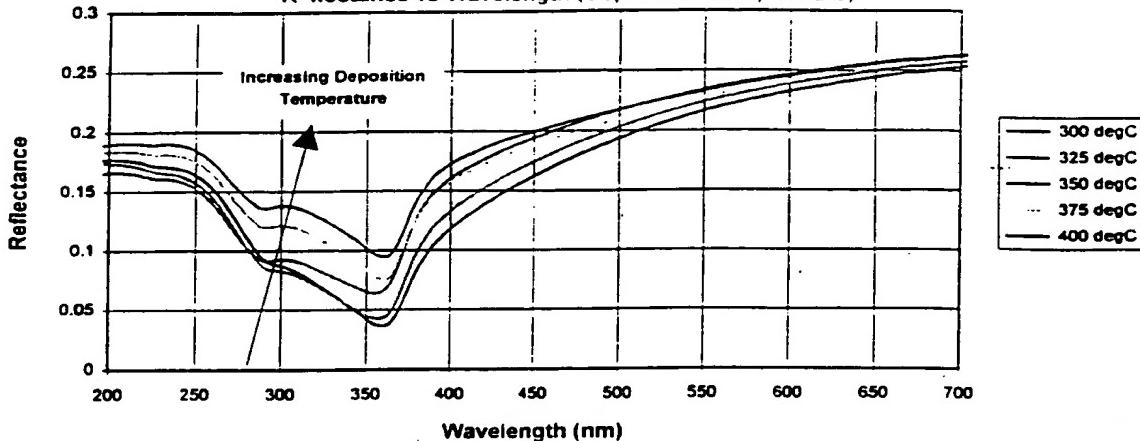


### ARC DEVELOPMENT k vs Wavelength (Total Gas Flow)

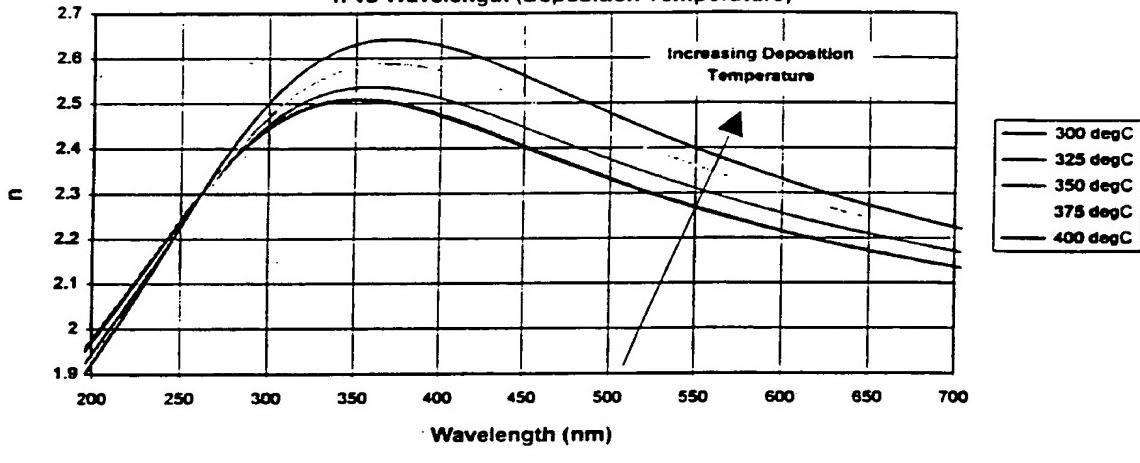


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**ARC DEVELOPMENT**  
R reflectance vs Wavelength (Deposition Temperature)



**ARC DEVELOPMENT**  
n vs Wavelength (Deposition Temperature)



**ARC DEVELOPMENT**  
k vs Wavelength (Deposition Temperature)

